USE OF SUBMARINE BOATS.

ADVANTAGES AND DISADVANTAGES OF THOSE OF THE HOLLAND TYPE.

WHAT THEY CAN DO AND WHAT THEY CANNOT DO—A NAVAL OFFICER'S CONCLUSIONS AS TO UTILIZING THEM.

Considerable interest has recently been aroused in submarine boats by the trials of the Holland in this country, and of the Gustave Zédé in France. The recent trials of the latter boat at Toulon and Cherbourg gave a good deal of satisfaction, it is reported, to naval experts, who declare that there are great possibilities in the navy of submarine fighting. Experiments made with the Holland during the latter part of last year were, no doubt, equally (if not more) successful.

The Holland is short and blunt, as compared with the Zédé, and in this respect, probably, has an advantage, as she can be more quickly turned and more readily manœuvred than the French boat.

This boat was originally designed to carry one aerial and one dynamite gun and one torpedo tube, and provision is made for carrying three torpedoes—one in the bow tube and two abaft the tube, one on the starboard side and one on the port. The two guns (as well as the torpedo tube) are rigidly built in the hull of the vessel, and therefore incapable of training either vertically or laterally, except as they are directed by the position of the boat itself. Experience has shown (as in the case of the Vesuvius) that long guns, firing a projectile at a low velocity, cannot be fired on board ship with any degree of accuracy, as the range must be determined (within possible limits) either by elevation or depression of the gun or by the force of the discharge. In addition, the gun must have no vertical motion during the interval the projectile is travelling to the muzzle, or the range will be either decreased or increased. The aerial guns cannot, therefore, have sufficient accuracy to warrant their use on board a submarine boat. The stern gun has been abandoned, to give more room on board the Holland, and it is probable that the bow gun will also be given up, on account of the difficulty of hitting a target aimed at.

MOST USEFUL FOR TORPEDOES.

With the torpedo it is different. The depth at which it will run and the distance are regulated entirely by its own mechanism, and when it is discharged from the tube it will automatically find the depth at which its depth register has been set, and run to the end of the set range at this depth (with slight variations). In other words, it is necessary only to give the torpedo its proper initial lateral direction, and it will then run to the point at which it is directed. From this it would appear that the best use for which a submarine boat could be designed would be that of a special class of torpedo-boat. Another reason for abandoning the use of dynamite guns, or any guns other than those used for firing torpedoes, is that in a small boat filled with delicate and intricate machinery, where the space is so limited, the crew small and their duties so arduous and delicate, they can scarcely perform any of them properly if called upon to perform so many of varied nature.

The motive power of the Holland is a gasolene engine for surface cruising and an electric engine for underwater propulsion. To charge the batteries it would be necessary to come to the surface, which could not be done in a seaway. When the batteries are fully charged they will run the motors while the boat is making about seventy-five miles (submerged). As the boat would be submerged for secrecy of operation and for her own safety when in the presence of an enemy, her normal cruising radius may be considered as about sixty miles from the point at which she could come to the surface, without danger of discovery by the enemy, for the purpose of recharging her storage batteries.

It has been found by experience that about the most trying, severe and arduous life that officers and men experience in the Navy is on board of torpedo-boats. The quarters are small, close and cramped, and at sea the motion of the boats is so great and violent that it is almost impossible to get the sleep and rest so necessary to all. This state of affairs would be much worse on a small boat of the Holland type, partly or entirely submerged all the time, where the crew could not come on deck for fresh air and exercise. It is doubtful then if they could live continuously for any length of time on one of these boats. They would, therefore, probably have to be operated from a safe base, to which they could resort frequently; either a larger vessel or from a shore station.

Torpedoes are taken on board the boat by putting them in a cage, which is then sunk to the proper depth and hauled into position, with the tail of the torpedo at the outer end of the bow tube and its axis coinciding with the axis of the tube, the outer door of the tube being open. The torpedo is then hauled into the tube by tackles from the nose of the boat, the outer door closed, the water blown out of the tube by air pressure, the inner door opened, and the torpedo hauled into the boat by its tail. This requires about twenty minutes for each torpedo.

PRACTICAL DIFFICULTY OF STEERING.

One of the greatest difficulties encountered in the successful operation of submarine boats is their steering. Their movements, when submerged, are controlled by two sets of rudders. The vertical rudders, to keep the boat in a vertical plane, are controlled by hand steering gear, while the horizontal rudders, to maintain the desired depth, are either controlled by hand or automatically, as desired. With the Whitehead torpedo both the vertical and horizontal rudders are controlled automatically, and the torpedo will run for eight hundred yards with a variation of not more than fifteen inches in depth and eight yards laterally. There is no reason why the submarine boat should not do equally well and, with the horizontal rudders controlled by a similar automatic arrangement in both torpedo and boat (as it is) while the vertical rudders are controlled by hand, even better results should be obtained with the boat than the torpedo. As the course maintained by the boat when submerged is entirely dependent upon the compass, it should be compensated as perfectly as possible, and have a strong directive force. In late trials of the Holland it was found that her steering was erratic. This was no doubt due in a large measure to the small, imperfectly compensated compass used, and the inexperience of her crew. The arrangement of the rudders was not entirely satisfactory, either. These points are all receiving attention and being remedied, with the probability of better steering in future.

One objection that has frequently been offered to submarine boats is that in an engagement between several vessels they would be quite as dangerous to their own vessels as to those of an enemy. This is true, in a measure at least. The remedy is for the submarine boat to engage the enemy single handed. As an instance of how this might be done, consider the case of the blockade of Santiago. It would have been possible for a submarine boat like the Holland, properly equipped with torpedoes and skilfully handled and manœuvred, to have gone out from Santiago Harbor night after night and made an attack upon the blockading vessels. A single vessel like the Holland, as skilfully managed as this boat has been around New-York, would have been a serious menace to our blockading squadron of vessels prior to July 3.

WHAT THE HOLLAND HAS DONE.

In a recent test of the Holland, the boat demonstrated her ability to run awash at a speed of six knots, or under water at four knots; to dive and rise readily and with certainty; to turn to starboard and port with reasonable quickness and certainty; to discharge a service Whitehead torpedo successfully and to recharge her storage battery by means of her own dynamo and gas engine. The mechanism for raising and lowering the boat in the water and for altering her trim worked satisfactorily, and was certain in its action. The air supply was good, and ample for the crew.

An American naval expert who has had exceptional opportunities for studying submarine boats has reached the following conclusions:

First—They should be considered as a special class of torpedo-boats.

Second—They should be used exclusively for firing torpedoes, and no other means of attack should be contemplated or provided for.

Third—They should be limited in their operations to defence of harbors, or attacks upon vessels in or near harbors, with no friendly vessels near the ones attacked.

Fourth—The approach to an enemy's vessel should be made slowly and cautiously, coming to the surface as often as necessary to obtain his bearing, until within eight hundred yards or less, when a torpedo should be fired, with the boat on the surface, whence the vessel fired at could be seen.

Fifth—The boat should then be immediately submerged and a second torpedo prepared for discharge.

Sixth—The boat should then be brought within torpedo range as before, and a second torpedo fired if desired. This should be repeated until all the torpedoes are discharged, changing the position of the boat as frequently as possible (within torpedo range) to prevent the enemy locating her.

THE OLDEST BRITISH PEERS.

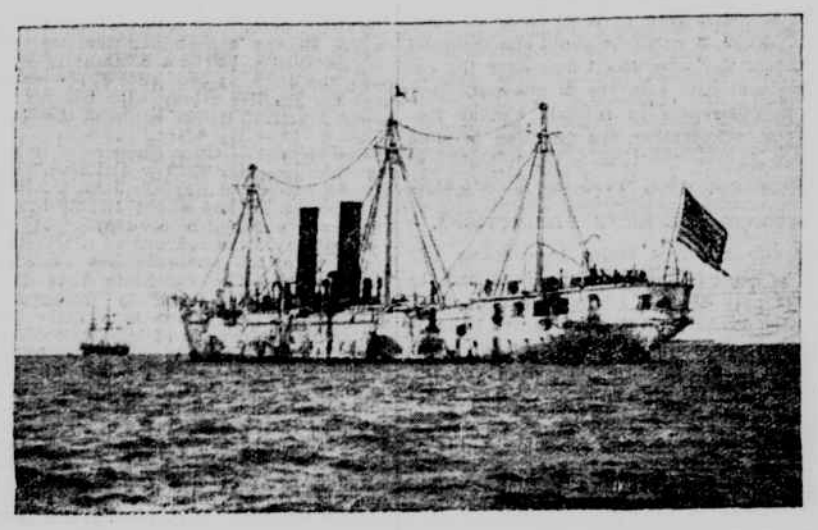
From The London News.

Lord Gwydyr will, to-day, enter upon his ninetieth year. He is not, however, quite the oldest member of the upper House, the Earl of Tankerville being his senior by about three months. The oldest peer is the Earl of Perth, but he has no seat in the House of Lords, his being only a Scotch peerage. The four who come next in point of age were all born in 1810—the Earl of Tankerville, born in January; Lord Gwydyr, April; the Earl of Mexborough, June, and Lord Armstrong, November. The Earl of Mexborough's, however, is an Irish peerage, conferring no seat in the House. The three oldest peers who have the right to sit and vote were, therefore, born within eleven months of each other. Peers who are octogenarians now make a long list.

THE REINA MERCEDES MAY COME.

HER EVENTFUL EXPERIENCE IN SANTIAGO HARBOR AND SINCE.

It is hoped that the Reina Mercedes, once a Spanish cruiser of Cervera's fleet and the last of his ships to be sunk, will be here in New-York Harbor at the time of the Dewey celebration. A request has been made to the Navy Department to have the vessel sent here from the Portsmouth Navy Yard, where she is now being examined with a view to making the necessary repairs to fit her for future use. When the Mercedes arrived in Hampton Roads a few days ago, flying an enormous American flag, she was greeted by a great throng of people anxious to see how the former Spanish warship looked. They saw her sides above the waterline deeply scarred and battered, although the new coat of white paint hid some of the damage from view. She was a bark-rigged vessel, and all three of her masts are still standing, though only at half length. The smokestacks between the first and second masts are uninjured.



THE FORMER SPANISH CRUISER REINA MERCEDES.
In Hampton Roads.

The Reina Mercedes was a steel cruiser, but had been used chiefly as a transport by the Spanish fleet. On the night of July 5, after the destruction of the rest of Cervera's ships, she was sunk in Santiago Harbor by the Spaniards themselves, in a futile attempt to block the entrance to the American vessels. Her sinking was described as a dramatic sight. Just after midnight an American scout saw her drifting slowly at the mouth of the narrow entrance. In a moment the fleet was ablaze with signals and a hail of shells was hammering down upon the Mercedes. But her intention was not to fight. She did not return the fire, and in the morning she lay in plain view, her bow resting on the beach under El Morro and the greater part of her hull below water. As an obstruction in the harbor she was not of the slightest use, not being in so good a position for that purpose as was the Merrimac, sunk by Hobson under much more hurried and confusing circumstances.

After abandoning what proved to be useless work on some of the other Spanish wrecks, the Merritt Wrecking Company succeeded in raising the Mercedes, and her voyage to Hampton Roads in tow of two tugs and under convoy of a steamer was accomplished in eight days without accident of any kind.

ANOTHER EARL INCORPORATES HIMSELF.

From The London News.

Another earl's estate is said to be coming into the limited liability company market. Under the oddly sounding heading, "Rumored Flotation of Earl Rosslyn," our Edinburgh correspondent says: "It is reported in well-informed Edinburgh circles that the estates and whole assets of the Earl of Rosslyn are shortly to be floated as a limited liability company. Negotiations with that object, it is understood, have been proceeding for some time past, but it will be a few months yet before the prospectus will be ready for issue. The active promoters are relatives of the earl's, who have obtained, or are endeavoring to obtain, the assistance of certain well-known financiers to issue debentures in place of mortgages on the estates. No details are yet to hand as to probable capitalization, and it is believed that this has not yet been settled by the promoters. The Earl, backed by a powerful syndicate, recently purchased 'Scottish Society,' an Edinburgh paper, to be amalgamated with his own paper, 'Scottish Life.'"

PREPARATION.

From The Chicago Post.

It was evident the moment she entered the parlor that he was angry.

"What do you mean by suing me for breach of promise?" he demanded. "I never proposed to you in my life."

"Why, of course you didn't," she answered in a conciliatory tone. "And I wouldn't have accepted you if you had. But you know I am going on the stage, and I must make some preparations."

GEN. MERRIAM'S RECORD.

HIS VIGOROUS HAND HAS BEEN FELT BEFORE CŒUR D'ALENE NEEDED IT.

General Merriam, whose methods of suppressing organized resistance to authority in Idaho have elicited the loud disapproval of the sympathizers with disorder, is not the sort of man to whom loud disapproval from such a source is likely to be of much consequence. Henry Clay Merriam is his full name, and much of the spirit of the stern statesman of Kentucky is mixed in with the Maine granite of the man's nature. For General Merriam is a son of Aroostook County, though his parents (probably from Whiggish predilections of their own) named him for the Southern champion of Whig principles when he was born, fifty-nine years ago, at about the time when William Henry Harrison succeeded Martin Van Buren at the White House.

Twenty years later young Merriam, who up to that time had had no intention of adopting soldiering as a profession, earned for himself some little local celebrity in his own county by "belling the cat" in a way and upon an occasion which may still be within the memory of old inhabitants of Aroostook. It was when a somewhat exceptionally hard lot of Maine scions had brought a country school to a standstill by laying violent hands on the teacher. The trustees were at a loss for some one to fill the place of a pedagogue who had been literally thrown out by his disciples. And then young Merriam undertook the not too inviting task and undertook not to be thrown out. He was not thrown out, and somehow his ability to hold his own with that turbulent mass of Aroostook youth gave him a military reputation with his fellow-citizens, for within a year, when a regiment of volunteers was raised in Aroostook County to aid in maintaining the Union, Henry Clay Merriam, recruit, was elected captain of a company. The folk in those parts thought that suppressing rebellions was one at least of young Merriam's peculiar gifts.

The judgment of his own people turned out right so far that, after having been brevetted for gallantry in the field, Merriam came out of the Civil War a brigadier-general of volunteers. He had in the mean time apparently acquired a taste for soldiering. Like many others of the most distinguished volunteer fighters of the Civil War, Brigadier-General Merriam elected to take service in the Regular Army rather than return to the quieter pursuits of peace. He was commissioned major, little thinking, perhaps, that he would live through many a hard fight with Apaches, and many a hard day's marching on the plains and in the Great Divide, to attain at last the same rank in the Regular as he had held in the volunteer army. Stationed at Fort Brown, Texas, on the Rio Grande, opposite Matamoras, Mexico, and at many other posts along the Southern frontier, he was not long in proving himself to both friend and foe—to both white man and red—"a stark man" and a thorough soldier. From the extreme South to the Northwest, where he was stationed twenty-five years ago, in the same district where he is now serving his country in a serious crisis, he made his way in obedience to successive orders of removal, never once in all his service having been ordered to any post nearer to the older and quieter civilization of the East than Denver, Col., where in June, 1897, when he was promoted brigadier-general, he commanded Fort Logan as colonel of the 7th United States Infantry.

BRIGADIER-GENERAL H. C. MERRIAM.
Commanding the United States troops at Wardner, Idaho.
(In the uniform of colonel.)

General Merriam enjoys two reputations of which any American Army officer ought to be proud. He is, in the first place, commonly regarded in his profession as what is called "an enlisted man's officer," one of whom no enlisted man has ever pretended to complain on the score of unfair or harsh treatment, but who is, if anything, generally regarded as leaning to the enlisted man's side of every question. In the second place, General Merriam is throughout the West the friend of the red man wher-